# Addressing Prior Conceptions and Misconceptions

In order to advance students' understanding, we must address their prior conceptions with how the world works. According to *How Students Learn Science in the Classroom*, (National Research Council, 2005), If students' "initial understanding is not engaged, they may fail to grasp the new concepts and information, or they may learn them for purposes of a test but revert to their preconceptions outside the classroom….New understandings are constructed on a foundation of existing understandings and experiences." If the teacher neglects to find out what ideas students already have, then there is the risk that any new information will be assimilated into their pre-existing framework—possibly perpetuating incorrect ideas and confounding future expansion of the intended learning concept.

Fortunately, a number of studies have been conducted and a wealth of information compiled on eliciting prior conceptions and confronting common misconceptions of scientific phenomena. As we plan instructional units, we should become as familiar as possible with the common preconceptions/ misconceptions that students have. By incorporating strategies to uncover and/or dispel them intentionally, we can guide our students to confront them directly, and through meaning-making activities and discussions, allow them to replace the misconceptions with evidence gained from experiences in our classrooms.

**For information on uncovering prior conceptions, check out the following:**

*How People Learn: Brain, Mind, Experience, and School* –especially chapters 3 and 4

*How Students Learn Science in the Classroom*—especially chapters 1 and 10

Teaching for Conceptual Change: Confronting Children's Experience

*Uncovering Students Ideas in Science* (book—from NSTA bookstore):

**For information on common misconceptions, check out the following sites:**

Children's Misconceptions about Science:

Recurring Science Misconceptions in K-6 Textbooks:

Misconceptions in Science

Earth Science Misconceptions

Science and Skepticism: Misconceptions, Bad Science, Religion & Paranormal Links

Targeting Students' Science Misconceptions

Approaches to Biology Teaching and Learning: Understanding the Wrong Answers—Teaching toward Conceptual Change

Teaching for Conceptual Change: Confronting Children's Experience

Avoid Misconceptions When Teaching about Plants